DETAILED ACTION

1. Claims 4 and 15 are pending in the application

Response to Arguments

2. Applicant's arguments filed 4/26/11 have been fully considered but they are not persuasive.

Claim Rejections - 35 USC § 103

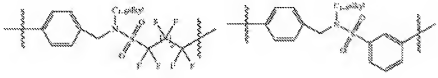
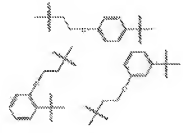
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 4 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Luthra et al. (US 2004/0236085) in view of Stevens et al. (WO01/14354) and Scheler (US 4,540,648) as stated in the office action mailed 2/2/11.

5. Applicant asserts that the claimed invention is directed to a regiospecific solid-phase ^{18}F-fluorination process of benzothiazole compounds. Specifically, according to Applicant's claimed invention, the TRACER of formula (Ab1) is labeled with ^{18}F at either the R^5 or R^8 position. As recognized by the Examiner, Luthra fails to teach or suggest the labeling of benzothioazole compounds, much less the regiospecific labeling of benzothiazole compounds.

6. The reference of Luthra et al. was not used to teach of benzothiazole compounds but was used to teach of solid-phase process for the production of ^{18}F-radiolabelled tracers via treatment of a resin-bound precursor, SOLID SUPPORT-LINKER-I$^+$-

TRACER Y$^-$, with $^{18}F^-$ to produce the labeled tracer, ^{18}F-TRACER; b.) removal of excess $^{18}F^-$ by ion-exchange chromatography; c.) removal of any protecting groups; d.) removal of organic solvent; e.) formulation of the resultant ^{18}F-TRACER as an aqueous solution. The SOLID SUPPORT may comprise polystyrene and the LINKER may comprise zero to four aryl groups (suitably phenyl) and/or a $C_{1\text{-}6}$ alkyl and optionally one to four additional functional groups (not excluding alkoxy),  , etc. and may further comprise an aryl group (suitably phenyl) adjacent to the I^+. Preferred examples include  .

7. The reference of Stevens et al. was used to teach of ^{18}F-substituted benzothiazoles wherein the 2-phenylbenzazoles comprise a halogen substituent, preferably fluorine, R^1, on the benzene ring of the benzazole nucleus. The R^1 halogen substituent will commonly represent F, preferably but not necessarily in the 5-position. Some of the ^{18}F labeled compounds of the disclosure are substituted in the 5- or 6-position via the corresponding 5- or 6-iodo substituted compound (Stevens et al. p5, lines 13-17).

8. At the time of the invention it would have been obvious to one ordinarily skilled in the art to substitute the benzothiazole/light sensitive compound of Stevens et al. for the

TRACER of Luthra et al. to generate a ^{18}F radiolabelled benzothiazole (derivative) via the polymer-bound/solid support of Luthra et al. as Stevens et al. teaches that ^{18}F-substituted benzothiazoles that are substituted on the benzene ring of the benzazole nucleus were known in the art at the time of the invention. The ^{18}F-substituted benzothiazoles are preferably but not necessarily in the 5-position and can be labeled with ^{18}F at the 6-position. The ^{18}F may be substituted at any other position of the benzene ring of the benzazole nucleus and one would envision labeling the benzothiazole at the 6-position, corresponding to the R^8 position of the instant claims, via a compound having a leaving group at the desired location.

9. Applicant asserts that none of the preparative methods of Stevens teach or suggest a solid-phase ^{18}F-fluorination process of benzothiazole compounds but rather a displacement reaction using the corresponding iodo-substituted precursor compound and a "regiospecific cyclisation" route.

10. The reference of Stevens was not used to teach or suggest a solid-phase process but was used to teach that ^{18}F-substituted benzothiazoles were known in the art and used as PET tracers at the time of the invention. The ^{18}F-substituted benzothiazoles are preferably but not necessarily in the 5-position and thus the ^{18}F may be substituted at any other position of the benzene ring of the benzazole nucleus.

11. The reference of Luthra et al. was used to teach of solid-phase process for the production of ^{18}F-radiolabelled tracers.

12. Scheler teaches that benzothiazole may be linked to a polystyrene solid support via a coupler.

13. At the time of the invention it would have been obvious to one ordinarily skilled in the art to substitute the benzothiazole group of Stevens for the TRACER of Luthra et al. as one skilled in the art would have been capable of linking a benzothiazole to the polystyrene solid support via the coupler, such as LINKER-I^+- of Luthra et al. as Scheler explicitly states that benzothiazole may be linked to a polystyrene solid support via a coupler.

14. At the time of the invention it would have been obvious to one ordinarily skilled in the art to attach a benzothiazole (derivative) to the polystyrene solid support such as that of Luthra et al. to avoid time consuming purification steps and allow for ease of production and greater throughput of a ^{18}F-substituted benzothiazoles, such as that of Stevens et al. for use in PET.

15. Applicant asserts that Scheler describes a non-halogenated benzothiazole compound of formula (I) for use as a light absorbing compound. The "support" of Scheler is what a "light sensitive layer" lies upon and is not the solid support of Applicant's claimed invention to which the LINKER is covalently bound. Further, Scheler is silent as to radioisotopic compounds.

16. Scheler teaches of a benzothiazole/light sensitive compound linked to a solid support/film (i.e. polystyrene) via a coupler component. The reference of Scheler was not used to teach of radioisotopic compounds.

17. The reference of Stevens was used to teach of ^{18}F-substituted benzothiazoles that are known in the art and used as PET tracers at the time of the invention.

18. The reference of Luthra et al. was used to teach of solid-phase process for the production of ^{18}F-radiolabelled tracers via treatment of a resin-bound precursor, SOLID SUPPORT-LINKER-I^{+}-TRACER Y^{-}, with $^{18}F^{-}$ to produce the labeled tracer, ^{18}F-TRACER.

19. At the time of the invention it would have been obvious to one ordinarily skilled in the art to attach a benzothiazole (derivative) to the polystyrene solid support (Luthra et al.) as Scheler also teaches that benzothiazole may be linked to a polystyrene solid support via a coupler.

20. Luthra et al. and Stevens both teach of ^{18}F radiolabelled radiopharmaceutical agents for use in PET. It would have been predictable and advantageous to use the polymer-bound/solid support of Luthra et al. to radiolabel benzothiazoles with ^{18}F to avoid time consuming purification steps and allow for ease of production and greater throughput.

Conclusion

21. No claims are allowed at this time.

22. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELISSA PERREIRA whose telephone number is (571)272-1354. The examiner can normally be reached on 7-4 M, 7-4 T, 6 Th, 7-4 F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Hartley can be reached on 571-272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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